

THERMAL BARRIER COATING PROTECTED BY INFILTRATED ALUMINA
AND METHOD FOR PREPARING SAME

ABSTRACT OF THE DISCLOSURE

A thermal barrier coating for an underlying metal substrate of articles that operate at, or are exposed to, high temperatures, as well as being exposed to environmental contaminant compositions. This coating includes a porous outer layer having an exposed surface and comprising a non-alumina ceramic thermal barrier coating material, as well as alumina infiltrated within the porous outer layer in an amount sufficient to protect the coating at least partially against environmental contaminants that become deposited on the exposed surface. This coating can be used to provide a thermally protected article having a metal substrate and optionally a bond coat layer adjacent to and overlaying the metal substrate. The thermal barrier coating can be infiltrated with the alumina by treating the porous outer layer with a liquid composition comprising an alumina precursor and then converting the infiltrated alumina precursor to alumina.